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ABSTRACT

The focus of this report is an in-depth analysis of the Research Services Office (RSO) at Lakeland Community College, including specialized information services and procedures of the RSO. Research services at Lakeland include but are not limited to: (1) acquisition, centralization, and coordination of internal reports; (2) collection of institutional data and preparation of summary reports; (3) centralization and coordination of academic and administrative information services; and (4) special studies and projects. Lakeland's RSO is user-oriented, emphasizing service, cooperation, and assistance to faculty and staff. The RSO functions as a clearinghouse, sharing reports, professional news items, and educational research materials. To insure the viability of its information service, the RSO seeks to maintain cooperative internal and external relationships. The RSO is an applied paradigm for understanding the process of innovation, dissemination, and knowledge utilization. Four basic files are maintained by RSO to functionally store information processed subsequent to acquisition from numerous sources. A unique cataloging and classifying system insures accurate material identification. A computerized catalog is maintained of the RSO documents collection. Eleven appendices illustrate the RSO cataloging and classifying system, the computerized catalog, the filing system, and various promotional materials. (JDS)

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THEORY AND PRACTICAL APPLICATION OF INFORMATION RESEARCH SERVICES AT LAKELAND COMMUNITY COLLEGE

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July 22, 1976

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I. INFORMATION RESEARCH SERVICES OVERVIEW

INTRODUCTION

Lakeland Community College is a relatively young medium sized community college located in the city of Mentor and in Lake County, Ohio. Lake County has a population of 200,000 people. Lakeland is Lake County's first public community college and opened its doors in Fall 1967 with an enrollment of 1,000 students. In Fall 1975, Lakeland had 5,800 students; 70 percent were enrolled in technology programs for degrees, certificates, or for selected courses to upgrade their professional or employment skills. The balance were enrolled in college transfer programs. Students range in age from 17 to over 50.

Lakeland is accredited by the North Central Association of Colleges and Secondary Schools and is a member of the Ohio College Association.

To deliver instruction to this enrollment Lakeland has 110 full-time faculty, between 100 to 130 part-time faculty, 20 administrators and 200 administrative and support staff.

In 1972 this community college established a Research Services Office and under its direction has promoted a viable dynamic system of information services to its users in order to maintain a link of currency and relevancy between literature-based information outside the college and the academic and administrative activities within the college. In other words, a community college that is truly "community" not only in terms of the population it serves but also by bringing current education and business ideas to the forefront of all college personnel.

There are four organizational units in the college that function as information repositories:

1. Library - a traditional academic library that has a collection of about 100,000 volumes and a staff of three. It was initiated and functions to deliver service to the student population by acquiring, cataloging, and shelving books and periodicals. It does not have nor was it staffed to provide in-depth reference or information research to faculty or staff.

2. Media Center - a center that produces, acquires and houses all audiovisual instructional materials: televison tapes/casettes, slides, audio tapes/cassettes.

3. Data Processing Center - generates and houses institutional data on computer discs and/or tapes.

4. Research Services Office - delivers specialized information and data services.

The focus of this report is an in-depth analysis of the research office and its specialized information services and procedures. An overview of its functions are, therefore, required.

INFORMATION RESEARCH SERVICES AT LAKELAND

It is the acquisition, storage, and dissemination of data and information or the coordination or making of studies useful or necessary in: a) understanding and interpreting the college, b) supporting academic and administrative decisions about current or future plans and programs, c) improving efficiencies or effectiveness of the academic and administrative segments of the institution, and d) related staff work and coordination. What are research services at Lakeland?

1) Acquisition, centralization, and coordination of internal reports. Several operational reports are prepared in numerous places within the institution for varying purposes: enrollment, personnel, annual reports, staffing, etc. Usually the department preparing them does so by specific requests for data on a particular phase of institutional operation.

   A need exists, therefore, for coordination and centralization of basic institutional reports. If reports are to be meaningful and consistent, the same definition and data must be applied and used. Although the Research Services Office does not prepare institutional operating reports, it is necessary to have complete files and access to them for they will be referred frequently by the research services personnel as well as by other personnel at the college and some external agencies.

2) Collection of basic institutional data and preparation of summary reports. The office assembles from reports and reference resources basic data on such factors as members of faculty, staff, student enrollment, student credit hours, etc. This data may be requested by segments within the institution as well as by outside institutions or governmental agencies. It is often necessary to provide a "fact book" containing summaries from operating and analytical reports, data, and reference sources for ready reference.

3) Centralization and coordination of academic and administrative information services. A related requirement to the first two functions is that research services keep abreast of educational and administrative developments, trends, innovations, and research in higher education--specifically community colleges--by attending to relevant literature. To be made "aware of" and collect this information is maximized only when it is disseminated to users within the institution. This is done by a program of 1) selective dissemination of information or current awareness service, and 2) responding to information requests that can be matched against the information and data resources base.

These types of information services give an institution the ability to anticipate problems or issues before they occur. It is not infrequent that decisions are asked for before individual extensive searching can be completed. Therefore, sensing a problem or issue or trend and acquiring information relative to it can provide a useful storehouse on an issue before it becomes a crisis, (example: affirmative action, collective bargaining, copyright changes, wage structures, etc.). Faculty and administration are able to go to one source, not to three or four to retrieve information or its whereabouts. Awareness of these materials, studies, research reports, etc., can be beneficial in an instructional effort by avoiding "re-inventing the wheel."

The Research Services Office has maintained an information center of newsletters, pamphlets, reports, etc., on community colleges, educational materials, technology, higher education, and so on, from other institutions, federal agencies, and companies as a resource for faculty and administration in the college. These are not the same types of materials that are acquired nor used in the library. The Office frequently provides abstract and dissemination services for busy faculty and administration who do not always have the time (nor at times even know that a resource exists) to peruse the resources.

4) Special studies and projects. When changes of procedure are emerging or significant issues are under discussion a special information search or bibliography may be needed. Groupings of data and information collection in 1, 2, and 3 above are a prerequisite to item 4. Studies fall into various categories, i.e.:

students; characteristics, retention, advising, occupations, and job information

faculty: numbers, recruitment, fringe benefits, salaries, etc.

non-faculty: numbers, salaries, occupations

curriculum: degree requirements, similarities in other institutions, new program development

administration: space, resources, environment, budget

This list is not comprehensive but certainly indicative of the types of information resources that this department must acquire. The studies may be initiated independently by the Research Office or upon request from faculty or staff. The Research Services Office is responsible for coordination of these studies and related projects. Some studies may, and in fact are, carried out elsewhere or with other institutional

participation. The Research Services Office may, and in fact does, encourage cooperation from and cooperate with other college offices, faculty members, and faculty committees.

5) Acquire socio-economic community information. Since the college draws from the community and the community is composed of ethnic, socio-economic, and age characteristics, it is necessary to collect, process, and disseminate information about the community that might be needed in decision making within the college or in comparing composition of the college's population in relation to the community.

6) Grant coordination and administration. Because of the importance of financing educational development efforts and the importance of the statistical data usually required to support these requests and the need for current information in this area, the Research Services Office provides current resources and information research on grant availability. The resources research is closely aligned with the information services; statistical support can be provided from functions listed in items 1 and 2.

7) Responding to questionnaires and reports. If the college is to be represented to external institutions in an accurate and consistent fashion, it is imperative that questionnaires and reports be centrally coordinated and housed. Since the Research Services Office functions as an information clearinghouse, it also coordinates the distribution of the questionnaires and collects the necessary data, utilizing appropriate institutional assistance when necessary.

COMMUNICATIONS AND INVOLVEMENT

Community colleges, including Lakeland, pride themselves on being primarily teaching institutions and Lakeland adheres to this philosophy. The image of the Research Services Office is one of service, cooperation and availability for services and assistance to faculty and staff.

There are communication links for involving faculty and staff in the knowledge of information research and of educating them to its value in their classrooms and in the college.

A most effective communication technique is that Information Research Services functions as a clearinghouse, sharing reports, professional news items, and educational research materials. The Research Office must be aware of the college's activities so that it can disseminate information on them to the individuals on campus with similar interests. For example, if information on computer assisted instruction is acquired by the office, it is forwarded to the interested instructional department or individual. He will generally reciprocate, keeping the office informed of his own activities and interests and seeking assistance and resources when he needs it.

One technique that has proven effective in this area is the monthly publication of Tie Line, a newsletter that lists acquisition of materials ranging from studies on classroom activities to college research, from short statements of different instructional approaches to recent dissertation abstracts, from new observations to experimental designs, from updates on the last issue of a report to announcements of new projects underway. Some publications include abstracts prepared by the staff. This publication is informative, it stimulates faculty and staff to be aware of and try different approaches and possibly to even report on them. Internal reports can then be distributed within the college and often to even larger information clearinghouses such as ERIC.

For information services to be viable, it must extend its services to the entire college program.

What is required for the acceptance and effective implementation of the above outlined functions?

1. The Research Services Director has established and maintains cooperative working relationships with several institutional offices: administration, data processing, instruction, etc.

2. Various college departmental offices have been made aware of the functions of the Research Services Office and are asked to participate and cooperate when needed. Conversely, the Research Office attempts to cooperate with and support other offices upon request.

3. The Research Services Office is made aware of current or projected issues in the institution so it may use this knowledge to provide timely information as it becomes available in the literature.

4. The Research Services Office is as objective as possible in acquiring and in disseminating information so as not to "cater to" individual preferences or whims. Information is objective, the interpretation subjective, and applied by the users. The office provides the data but does not decide or evaluate with it.

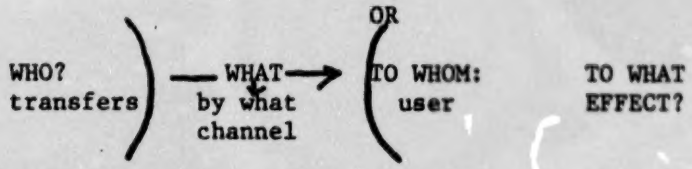
5. Research Services must and does attempt to keep abreast of current research, information processing, and educational technology and information retrieval resources.

II. CONCEPTUAL FRAMEWORK

The Research Services Office is, more or less, a real and practical application of a framework, or model, for understanding the processes of innovation, dissemination, and knowledge utilization rather than simply the establishment of a special library.

Havelock and others in the summary in Planning for Innovation through Dissemination and Utilization of Knowledge (1) view dissemination and utilization (D & U) as "a transfer of messages by various media between resource systems and users." Beyond the scope, then, of merely acquiring, identifying, and storing material in a traditional library fashion is the broader scope of appreciating the user's needs--in this case a specific faculty and administration population--and his problem solving patterns. And the user, in turn, must appreciate the limitations of solution formulae and resources. This type of mutual interaction will make solutions more relevant and effective and will also build trust, mutual perceptions by user and resource persons and the ability to deliver not only a material resource but to provide useful information. The emphasis of information research services applied here (Lakeland) then is not so much on the physical manipulation and placement of materials but more on the ability to become a channel for the rapid, effective, efficient, and timely transfer of information.

At the outset then, in 1972, the Research Office was faced with not only a problem of acquiring resources, but also a "process" of knowledge transfer or a "linkage" between a potential "user" and a potential "resource." (Havelock, p. 1-10)



The resulting system that develops (i.e., in this case a research services office in a community college) must consider its typical knowledge user and what and how he uses. John Doe is a community college professor trying to teach business management by including current happenings along with theory. John is also interested in what others do in his area. John is a practitioner in a profession that is clearly defined. He in turn provides service to consumers, users, called students. He, also, is a receiver of knowledge and a disseminator (a system in itself). We are interested in him because he wants to gain new knowledge to effect change; to become an "innovator" as Havelock uses the term. He is already part of a sub-system and wants to draw on another system as a user or consumer to gain new knowledge resources which he again will disseminate.

(1)Havelock, Ronald G., et. al., Planning for Innovation Through Dissemination and Utilization of Knowledge, Center for Research on Utilization of Scientific Knowledge, Institute for Social Research, University of Michigan, Ann Arbor, 1969, Fifth Printing 1975.

John Doe will draw upon the resources of the Research Services Office. This office is in itself a sub-system. It is gathering from a variety of resources and becomes a consumer, only to also be in the position of a transfer agent or disseminator to a receiver (John Doe) who we have already identified as a kind of sub-system.

We have then not just a Research Services Office to gather material, but rather interdependently related dynamic systems acting upon each other for knowledge dissemination and utilization.

See Fig. 1

In turn, the activities of the sender and receiver are related in the process of knowledge dissemination and utilization.

Fig. 2 is from Planning for Innovation . . . and gives an excellent depiction of how "actions of sender and receiver may be related . . . (and) taking place during the phases of adoption and diffusion" of information.

As in Fig. 2, the activities and procedures of the Research Services Office parallel the "sender" activities, and I have found that the activities of the faculty and administration participating in research services closely resemble the receiver activities in Fig. 2.

Figure 1

Knowledge Dissemination and Utilization
as Interdependent Dynamic Systems

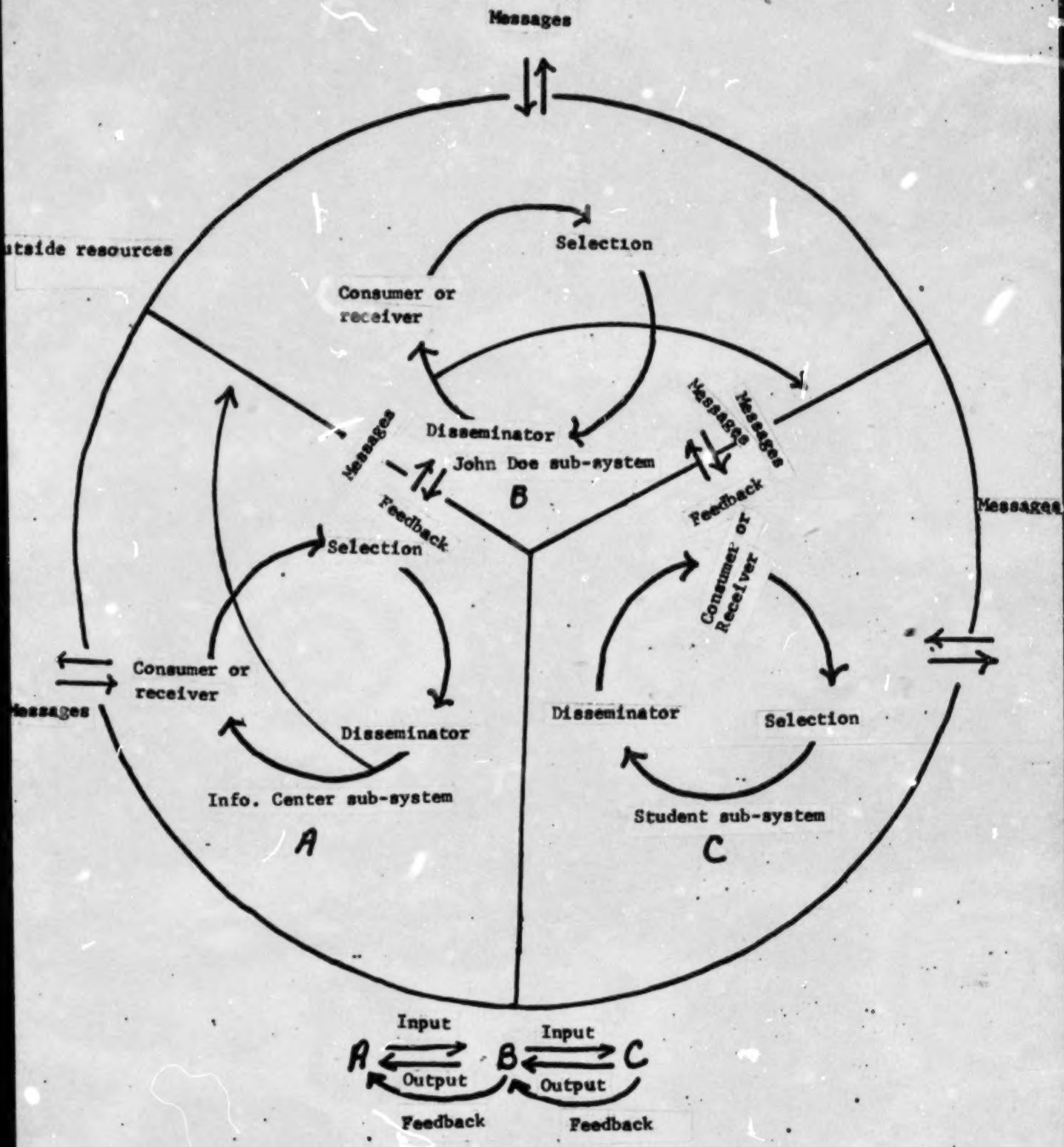
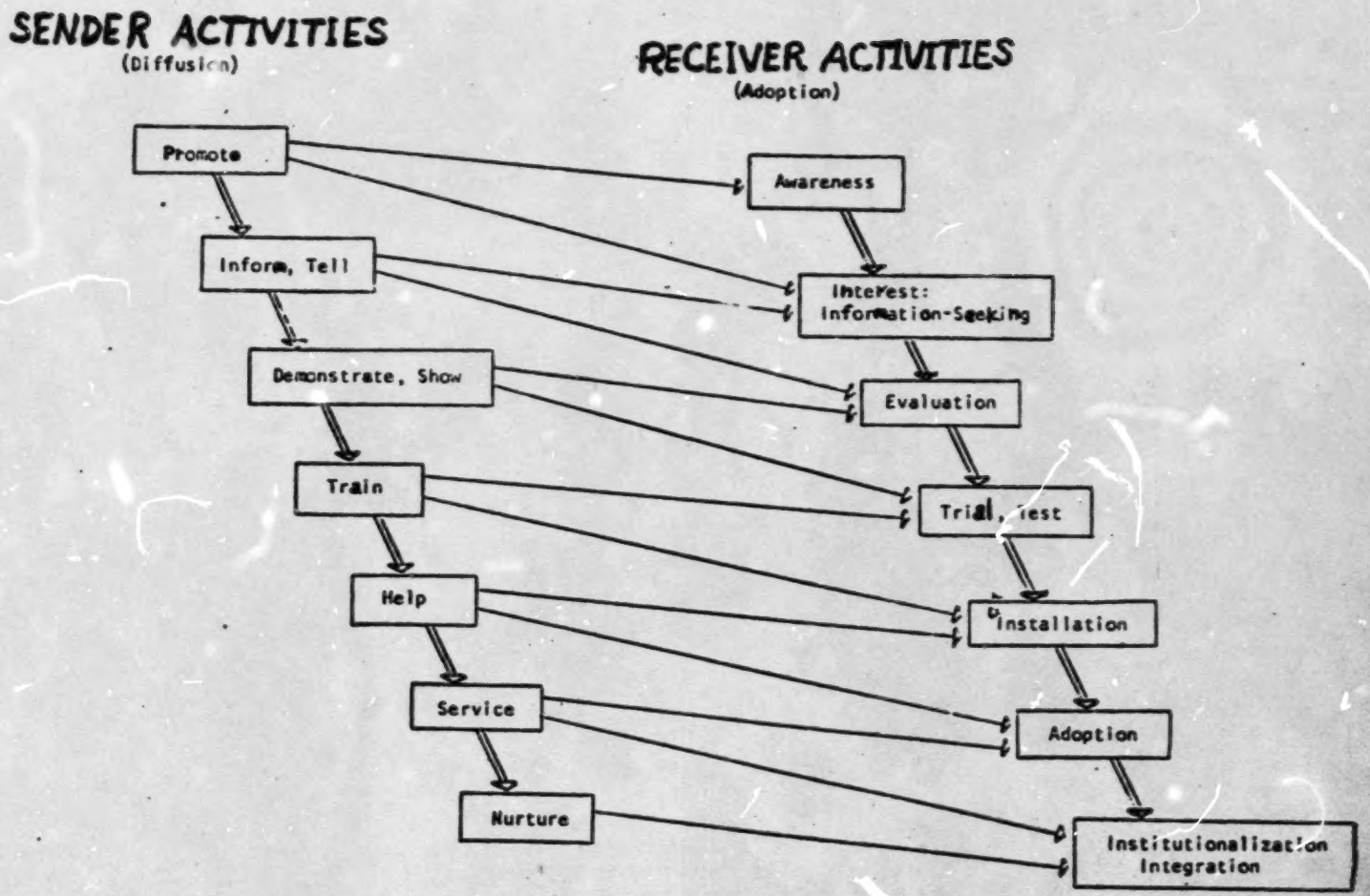


Figure 2*

Relationship of Sender and Receiver Activities



* p. 10-54 in Planning for Innovation Through Dissemination and Utilization of Knowledge.

III. DELIVERY OF THE SERVICES

A brief profile of the user of information research services might look like this:

- Communicates by phone or memo
- Will ask for data rather than come in to browse
- Usually interested in his/her specific discipline area, not the theory, rather something current or a specific aspect
- Usually needs it in a hurry
- Refers to items most frequently by groups of people who issue them or by form (i.e., the government publication on labor standards; a professional association that put out a directory; ABC Community College's report).

The facts and criteria I had to consider in acquiring, classifying, and disseminating information:

- Mostly non-book materials: pamphlets, reprints, etc., would be handled and recalled
- A fair amount of ERIC reports would be ordered
- Records were needed to identify each report for rapid retrieval
- This was not an in-person browsing area
- Almost 100 percent of materials would be in file drawers
- Materials must be able to be identified, classed, and filed by clerical personnel.
- Put things together the way the users tended to ask for them (by form, agency,-as opposed to title or individual name,-and also by subjects)
- Be able to be processed quickly
- Keep processing costs and time to a minimum so time could be spent on the "<u>research</u>" part of the responsibility
- Allow for coding for simple computer programming
- Keep it simple
- Frequent use of student help
- Purge easily

<u>Files</u>

In analyzing the functions to be performed and the above criteria, I decided there would be four basic "files" of information and records:

1. Technical file--for all reports, reprints, monographs that are considered to have permanent or long-range value. This is the core of our "information center." (All subsequent descriptions relate to this technical file (TF).)

2. Subject file--for all miscellaneous type materials, newspaper clippings, etc., that are considered to be of short-range value. Materials arranged in alpha order by subject.

3. Grants file--for information regarding all resource materials on specific foundations, government programs, etc. Materials arranged by alpha order within the following categories:
   Foundations
   Federal programs
   State (Ohio) programs

4. Research Services file--for day-to-day operations. Materials are classed and filed by mnemonic codes that represent logical functions. This schedule is in the appendix.

Selection and Acquisition

Information contained in the Technical File consists primarily of monographs, reports, reprints, etc. The documents selected are based on the expressed needs and interests of the instructional and administrative staffs who directly request or indirectly provide feedback to Research Services through a current awareness program. (Explained later.) The areas of interest are focused primarily on higher education, community colleges, instructional disciplines represented at Lakeland with an emphasis on the technology programs, and local (Cleveland and Ohio) economic and business information--with concentration on administration, curriculum, educational technology, evaluation, faculty, goals, planning, and research.

Materials come in as a result of:

a) Correspondence requests to schools, companies, agencies, professional associations
b) Orders to the U.S. Government Printing Office or NTIS (National Technical Information Services)
c) Orders to the Eric Document Reproduction Service (EDRS)
d) Routings from personnel and departments in the college
e) Subscription orders
f) Unsolicited reports from associations, mailing lists, etc.

Cataloging of Materials

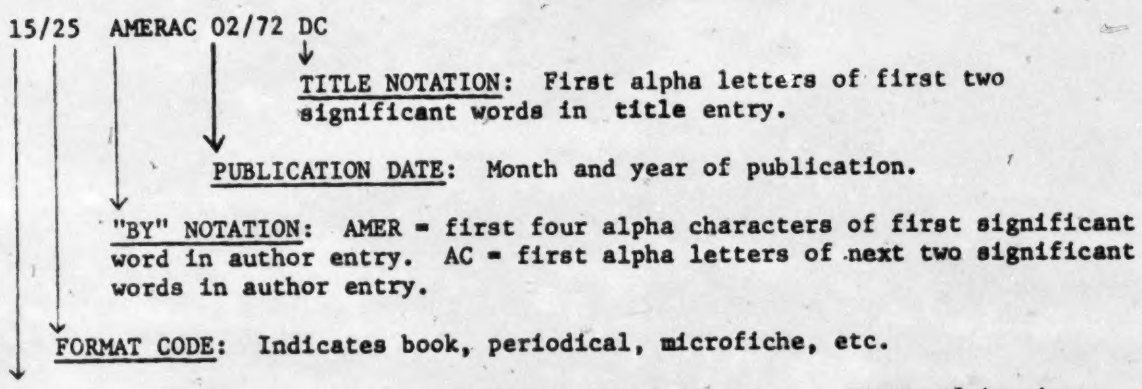
I decided that each item should be uniquely identified for retrieval purposes. The identification catalog number must be simple enough for different clerical or secretarial personnel to assign; however, it should be able to tell us something about the document. Since I already knew that users called for things by type of issuing agency (an Ohio Board of Regents report; a government report on population; a Plain Dealer marketing report, etc.) or by format (a bibliography, newspaper, etc.), I decided to initiate a scheme based upon "broad" categories of documents by form or type of issuing agency. This would provide no direct subject access but it could get someone who might want to go directly to a drawer other reports of the same agency or college.

These categories are simple enough for non-professionals to assign. The "broad category" number gets the report into a proper file drawer; a two-digit number gives us a 100 category expansion (00-99) to allow for changes and additions. As a matter of fact, when we began receiving other than report formats to physically accommodate a few books, computer printouts, and microfiche--two digits (from 25-49) were set aside as format codes as seen in the accompanying current schedule (in appendix).

Additional information from the document itself easily forms a code and a document number to uniquely identify each document. The document number has a maximum of six parts or fields. Initially, it was hoped that in time the document number could become the main location number for "computerizing" additional bibliographic information. This is, in fact, now being accomplished. The structure of the document number is in Fig. 3.

Figure 3

STRUCTURE OF DOCUMENT NUMBER


15/25 AMERAC 02/72 DC
TITLE NOTATION: First alpha letters of first two significant words in title entry.
PUBLICATION DATE: Month and year of publication.
"BY" NOTATION: AMER = first four alpha characters of first significant word in author entry. AC = first alpha letters of next two significant words in author entry.
FORMAT CODE: Indicates book, periodical, microfiche, etc.
BROAD CATEGORY: Broad category of document indicating category of issuing agency.

For example, we have the following document by the American Association of Community Colleges, titled Directory of Community Colleges: 1974, published in February, 1975. The document has 500 pages and will not fit into the file cabinet. The number is:

02 = Professional Association	(Broad category)
/25= Book format	(Format code)
AMER = from American	
A = from Association	Author or "BY" code
C = from Community	
02 = February	(Date code)
/75= 1975	
DC = Directory of Community	(Title code)

Therefore, 02/25 AMERAC 02/75 DC is the document number.

Therefore, sufficient information can usually be gathered from a title page to assign a document number within a matter of seconds or a very few minutes. Similar categories and documents and issuing agencies would be clustered together. In fact, in practice we have found we can often assign document numbers at the time a document is ordered.

Preparation of a Catalog

Besides assigning document numbers for unique identification, it is necessary to provide access to the research office holdings so information can be retrieved and disseminated. Only in this way can a member of the research services staff, or a faculty or administrative staff member decide whether or not we have a specific report and, if so, where one may locate it.

After long consideration and discussion with the potential users, it was concluded that several access points would be beneficial. They are listed according to the rank of importance determined by interviews with potential users.

	Access points	Rank
1.	Corporate author	1
2.	Subject area	1
3.	Individual author	2
4.	Title	3
5.	Document number	4

It soon became obvious that we needed "catalog cards" or some reasonable facsimile; the production and reproduction posed several problems, namely, the research services office had a director, a secretary/assistant, and ever-changing student part-time help that comprised the staff. (Currently there is a director, a secretary assistant, one full-time research assistant.) As important as cataloging and record keeping is, it was never intended to become a high priority budget focus of the office.

In effect then, I had:

- Small staff
- Time constraints
- Budget constraints
- Requirement for some type of catalog
- A collection to be comprised of non-book, but printed materials

Several approaches were tried to combat the problem. I'll mention them briefly here so I can proceed to what we now do.

1. Typing of regular 3" x 5" catalog cards with abbreviated bibliographic information.
2. Typing of 3" x 5" card stencil for rapid duplication.
3. Preparation of duplicate cards in the Word Processing Center using magnetic card typewriters for rapid, original reproduction.

All of the above were just too time-consuming and expensive in manpower (or womanpower) for the limited staff and the scope of responsibilities the office had. Also, changeover in personnel required frequent training and orientation for which little time was available.

I decided that traditional card preparation was not feasible. Either we do not have multiple access points, or else I design something to fit the requirements of this small information center. I inventoried what was available to me and what was needed.

I needed:

- Some type of catalog
- An original "shelf list" card
- Rapid duplication
- Information that could be in people's "hands," not only in card catalogs or drawers
- Few rules
- Quickly learned procedures
- Ability to update quickly and "move" documents out
- Ability to delete quickly

I also had available to me the facilities of a data processing department that provided administrative data processing services to the college; it had no knowledge of library procedures, catalogs, or requirements. Using the computer would require space constraints for programming purposes. It would require consistency in format and readily recognizable fields. But it could manipulate "fields" rapidly for access. Instead of typing cards three or four times, why not type <u>once</u> and use some type of carbon reproduction?

My solution to the problem was developing a four-part "form" catalog card that requires one typing entry. Color-coding each part, clearly identifies it for filing locations to produce an"instant" shelf-list, author index, title index. One part of the "form" would go to data

processing for key punching. Using the document number as the filing key, the computer could generate a subject index. In addition, on a regular basis I could produce a computer printed catalog of not only subjects but also titles, authors, and document numbers. An edit of the computer lists by each "field" would also catch any clerical errors, date errors, or duplicate entries if they should occur.

Documentation of Material

As reports, monographs, etc. are received, they are assigned a document number, and pertinent bibliographic data are entered on a document record "form" card. Each document is analyzed for subject content as it relates to Lakeland's interest. A descriptor authority list has been developed to control terminology. Descriptors (subject terms) used coincide with current terminology used in the ERIC (Educational Resources Information Center) Thesaurus. Other terms are added that apply to our own local interests. The descriptors selected and applied to each document are the path to subject retrieval of that document. Descriptors are carefully selected in terms of the retrieval and usefulness of the document to respond to various inquiries that might be asked by a faculty member of administrative staff member. The terms are necessary to facilitate retrieval.

The appendix presents samples of the new "card."

Computer Catalog

It is less expensive for the Data Processing department to process our cards in a batch mode than on a daily basis. In other words, whenever we have about 50 or more records to process, the Data Processing department will process them in a "batch." It was decided to process all new cards on a quarterly basis for editing and office use and accumulate these on a semiannual basis for a "current catalog." It is necessary for us therefore to maintain the color-coded hard copy indexes for about six months at which time they can be discarded. Only the hard copy document record index is maintained as a "backup." The flow chart describes this process. (Copies of pages from the computer catalog are included in the appendix.)

See Fig. 4

With these procedures, we are able to "batch" file, dispose, and data process; do not have to add new drawer space for cards, and we can have multiple copies of the catalog for distribution within the college. One person can do the "cataloging" in a minimum of time. We have either a colored card or computer printout record of all documents; less than two weeks of non-processed documents are backlogged. The document record algorithm and form card allow us a minimum of cost and handling while maximum efforts are expended on current awareness and dissemination.

Figure 4

Document Processing and Computer Catalog Preparation Flow Chart: LCC Information Research Services

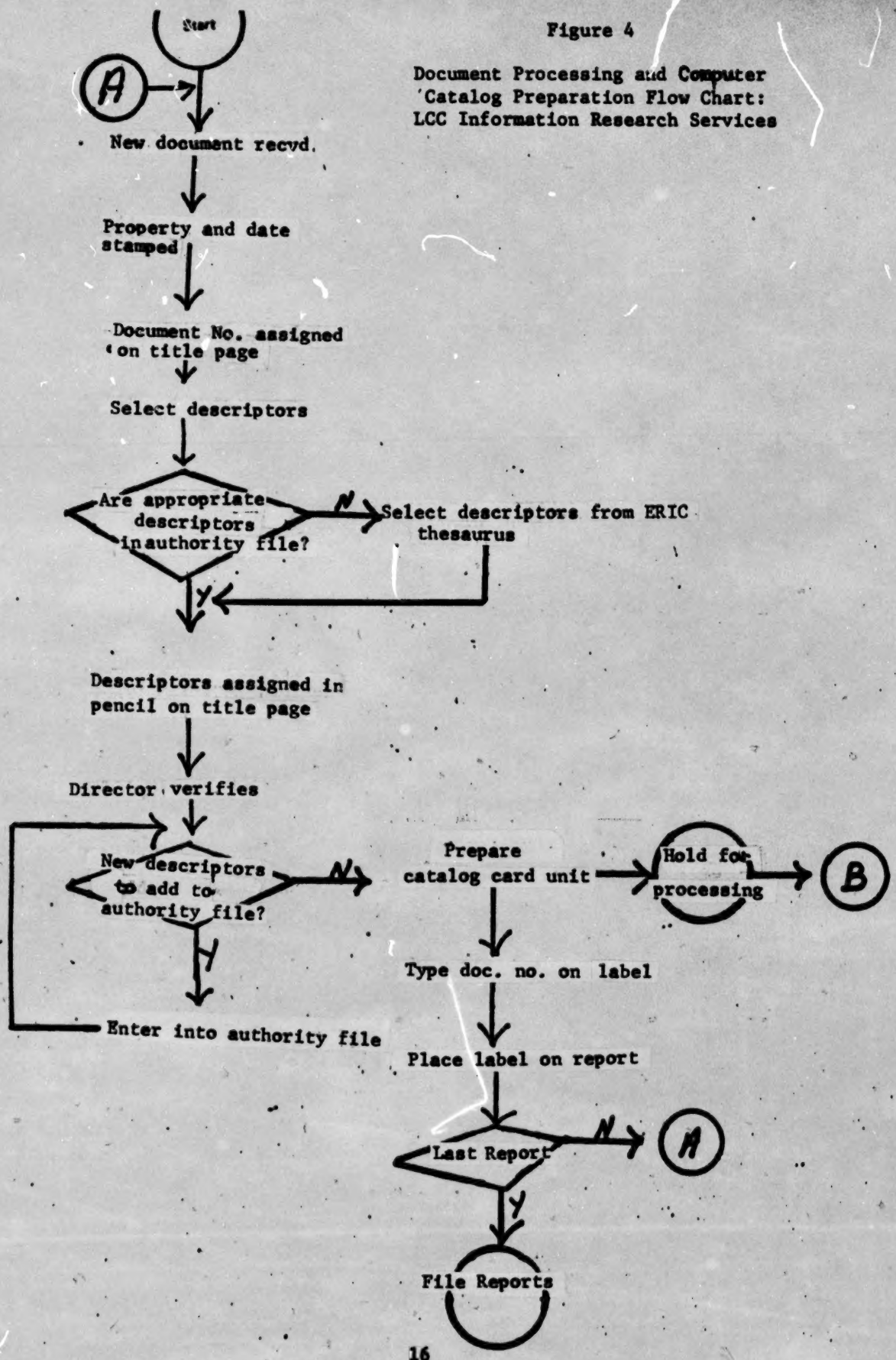


Figure 4 (Cont.)

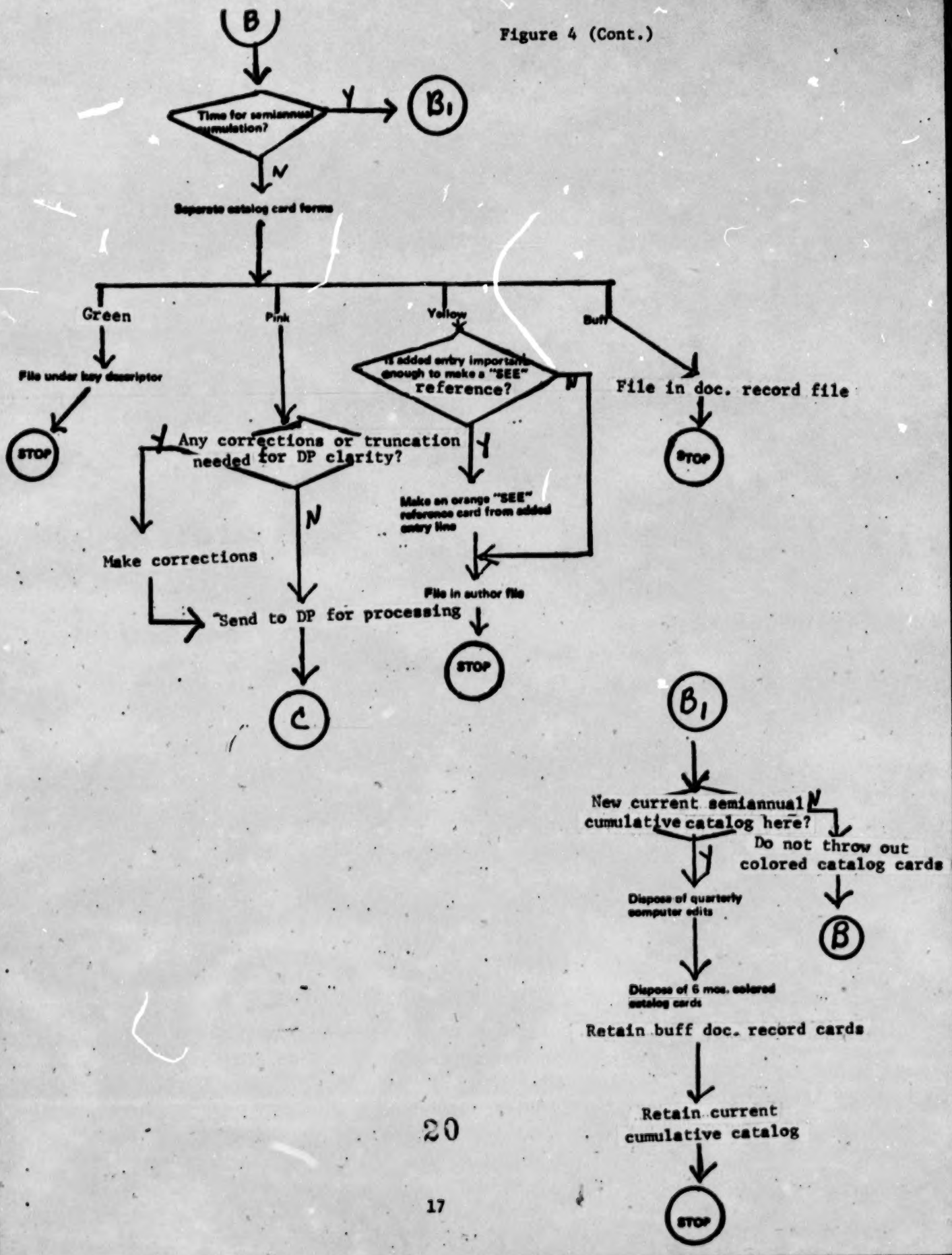
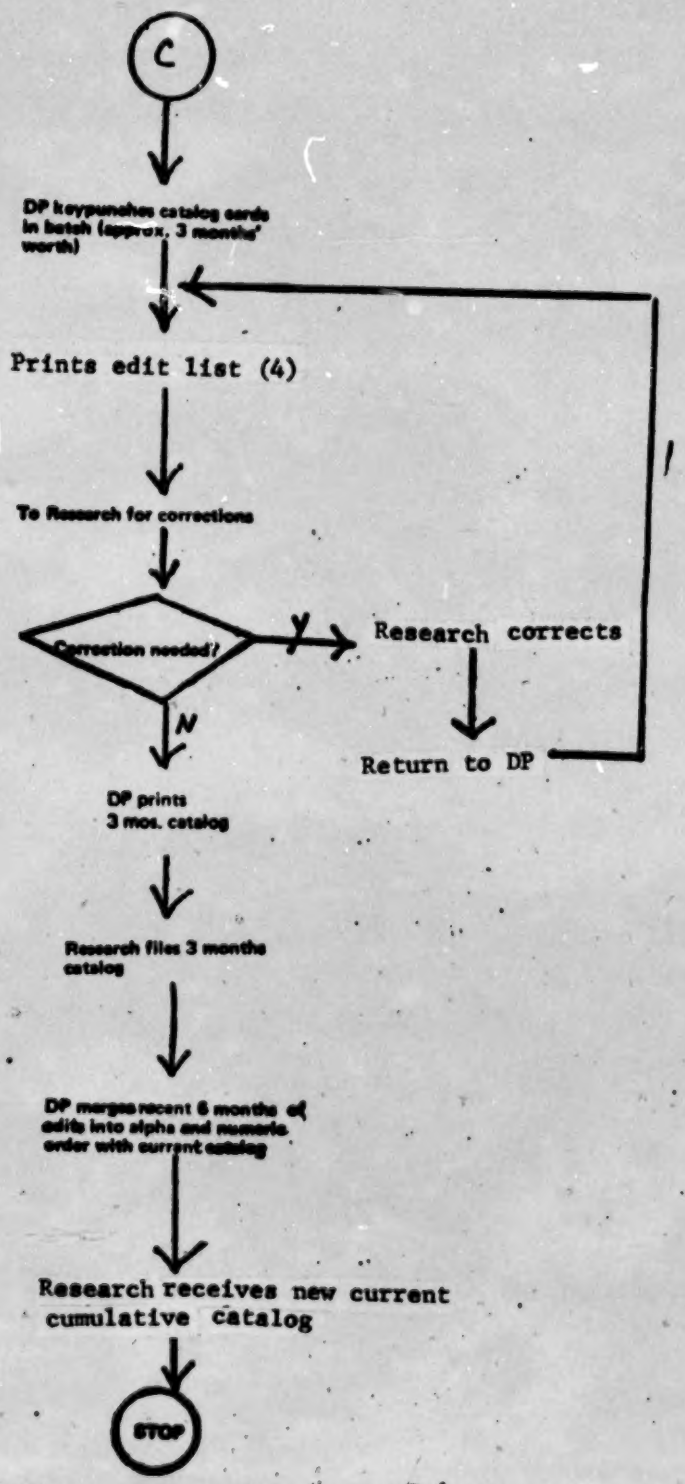


Figure 4 (Cont.)


C
DP keypunches catalog cards in batch (approx. 3 months' worth)
Prints edit list (4)
To Research for corrections
Correction needed?
Y
Research corrects
Return to DP
N
DP prints 3 mos. catalog
Research files 3 months catalog
DP merges recent 6 months of edits into alpha and numeric order with current catalog
Research receives new current cumulative catalog
STOP

Dissemination

The process described above allows us to focus upon dissemination to the user. A monthly publication entitled Tie Line is produced each month that includes listings of recent documents that are or might be of interest to users. The documents listed are arranged by broad subject areas and are identified by document algorithm. A handy response sheet at the end permits users the convenience of requesting without a personal visit. This has been an effective technique of "instructing" and "nurturing" users since 75 percent of all items in Tie Line are circulated. This enhances our feedback mechanism and relates "messages" as to what areas of interest we should continue, delete, etc. (A sample Tie Line is in the appendix)

Tie Line is distributed to the entire college community and is considered as part of our current awareness program. Prior to the listing of materials in Tie Line (since these are already received and cataloged), copies of pages from selected periodicals, ERIC abstracts, news items, etc., are forwarded to those names on our current awareness list by areas of subject interest. Using manual methods, we can accommodate approximately 20 department heads, etc. The individual then is kept aware of areas of interest, can order documents through a centralized source, and can be assured of prompt receipt. Yet costs are kept down and duplication avoided since these "current awareness" documents become a part of the technical file, the catalog, and are shared via Tie Line with the rest of the academic community.

Within the past year and a half, almost 100 businesses, schools, etc., in the Lake County, Ohio community are receiving this publication; many have come to the college for additional work with the reports. In turn, some agencies have forwarded copies of their reports and research to be included in our technical files and Tie Line. We have considered the possibility of a community research information "clearinghouse."

Query-Response Communication Flow

The Tie Line and current awareness is pretty much a direct document-oriented information service. People have inquired about a problem directly requested an order; we have received, notified them about, or in some other way located specific items. The other side of the coin is the indirect service or more accurately information research requests on a "problem." It is necessary then not only to be able to locate what is in our collection by the access points in our catalog, but also to develop a good query-response communication flow--become aware of the problem solving complexity of the user. This is an integral function of the dynamic system of knowledge dissemination described earlier.

It sounds like a simple process--matching two people as "resource person" and "user" (p. 2-21 in Havelock). There is an input message (information question) from a consumer to the information center and an output message (answer or resource) from the information center. But is it really that simple? It is assumed that the input message is received properly. Is

the resource person properly interpreting the request (message). If mutual understanding does not occur, there will be no effective output message. The resource person must recall knowledge from her own memory, or from the files available to her. This is where the catalog or a file and all its access points must be utilized to select not a document but rather that core of materials which will contain relevant information bearing upon the user's problem. Figure 5 displays the significance of this interview process.

See Fig. 5

The increase of requests to the Lakeland Research Services Office is for problem-solving solutions rather than documents per se. It is interesting to note that the easier it has become for personnel to "know," obtain, and read current information, the greater their requests for more in-depth information research and bibliographic compilations. As a result of this, there were increasing demands of manpower time to provide literature searches. With the manpower and relatively limited resources available, there was considerable time lag in producing and delivering this information. Consequently, since January of 1976, on-line interactive information retrieval services have been added to the information research services available.

Computer Search Services

Information research service is able, via a terminal typewriter and telephone, to link up with Lockheed's Dialog(R) and Systems Development Corporation's Orbit data bases. Using these links, we have access to over fifty of the world's largest data bases covering education, business, science, technology, social sciences, and the humanities. It virtually extends our hands and knowledge to search and retrieve information that otherwise would be unobtainable because of budget limitations, tight manpower situations, and/or a lack of physical proximity to this broad range of information.

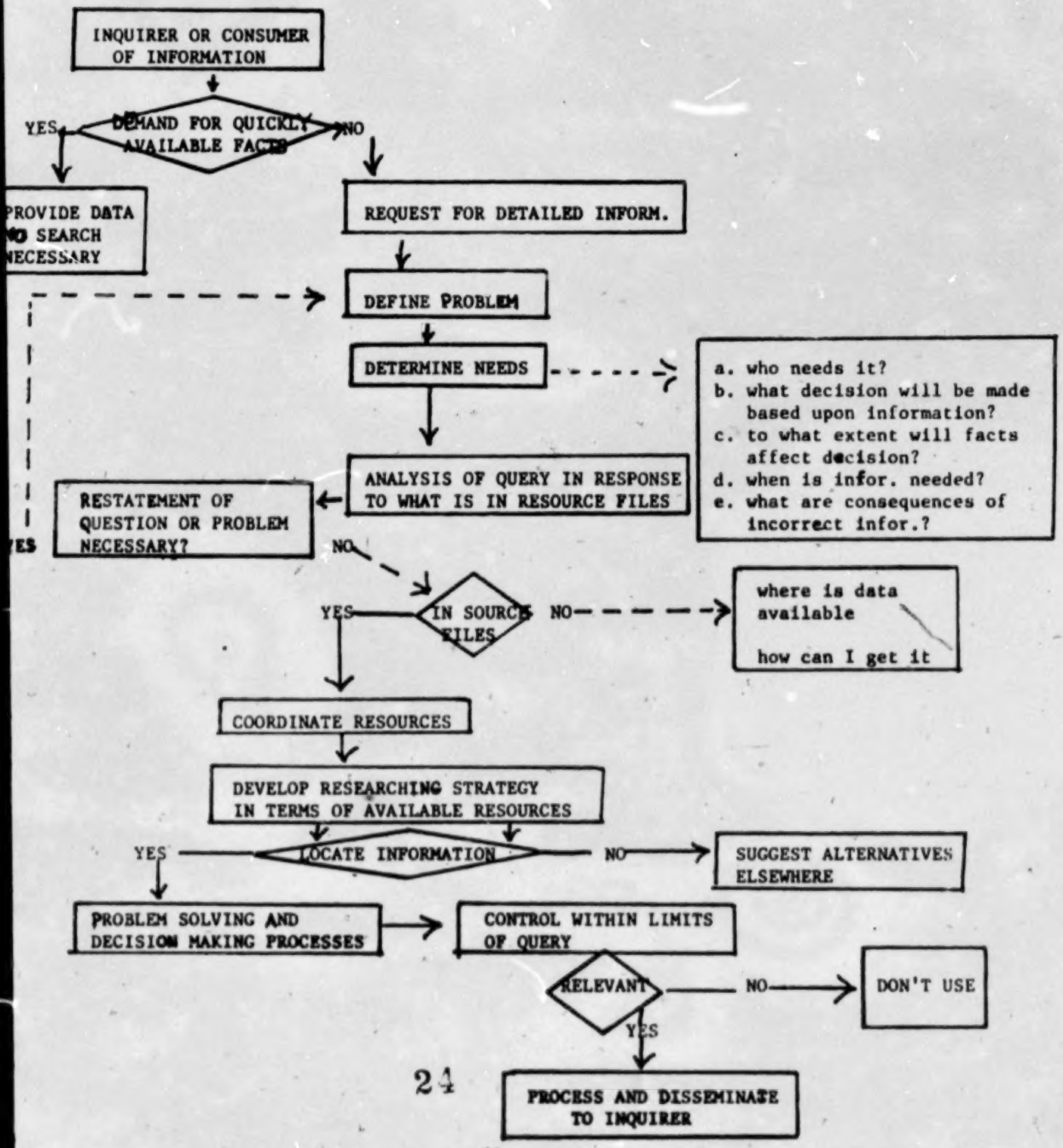
It permits us to serve more personnel, with more comprehensive information within a few minutes or few days of their requests. No additional manpower is required. However, all the same concerns discussed earlier in this paper--utilization, interpretation of questions, feedback and communication--are still present; in fact, they become more finely tuned concerns than in manual methods of searching.

To this end the following steps were taken to familiarize the faculty, administration, and staff, not only of this new resource tool, but also to instill some sense of "familiarity" of the scope and limitations of the latest in information technology and complexity.

- All top administrators were advised of the availability of the computer search services. A couple of sample searches were distributed and analyzed for them. An estimated comparison of costs of the manual versus machine searches was presented.

Figure 5

QUERY-RESPONSE COMMUNICATION FLOW CHART ILLUSTRATING THE PROCESSES INVOLVED FOR AN UNDERSTANDABLE EXCHANGE OF INFORMATION EACH AND EVERY TIME THERE IS A REQUEST FOR DATA AND INFORMATION FROM RESEARCH SERVICES



- Then the time factor--12 minutes computer versus several days manpower time (assuming all the hardcopy resources were available, which, in fact, they were not)--was emphasized.

- The Dean of Instruction announced to all department chairmen that a new searching capability was available.

- The Research Office announced by memos, signs, and reminder notices that demonstrations for each academic and staff department would be given. The response was overwhelming.

- Using a lecture format, complemented by transparencies, a blackboard, and handouts, I fully explained (1) the concept of information retrieval, and (2) specifically the "how to" of the data bases on hand.

- A demo search--in the area of the discipline(s) of the faculty attending--was done. Suggestions were given as to how this service might be used to assist faculty and administration in their respective roles.

- The Tie Line publication carried news of the service plus some detailed information of various data bases.

We have been producing searches at the rate of about ten per month. The "average" search takes approximately 15 minutes and costs about $1.25 per minute. The requester is asked to fill out a search request form clearly stating his/her question or problem. The "interview" or the query-response communication flow (Fig. 5) succeeding the written statement is extremely significant and necessary. Only here can the search analyst interface between the original stated problem, the interpreted and modified question, and the development of an effective search strategy.

All search strategies are drafted on a "strategy worksheet." This permits the search analyst to precisely state the concepts and terms to be searched, alternative strategies employing Boolean algebra, and a variety of synonyms.

All searches, when completed for college personnel (except for personal use which is paid by the individual) are given to the requester,, and a copy of the search strategy and resulting bibliographic citations become part of the Information Research Office's technical file. Each one is then treated as any other monograph entering the office. It is "shared" with others via Tie Line. All non-confidential bibliographic searches are available for purchase to those outside the college at a rate of 15 cents per citation.

I have found this procedure provides our users with rapid, timely, and comprehensive information that, prior to this, we have been unable to deliver.

Among some of the applications to date are:

- preparation of reading lists on selected topics for classroom use.
- doing a literature search for chemistry students on a particular topic assigned by the instructor. Students had to precisely state the brovlem and evaluate the relevancy of retrieved information. The resulting information was applied to laboratory problems.
- to determine current data on foreign automobiles in order to develop a market campaign as a classroom project for an advertising class.
- provide to a seminar on management a handout list of current readings.
- provide a faculty committee with references on what is available in the literature relating to keeping college administrators current.
- provide a program planning budgeting committee with abstracts on the concept of PPBS.
- provide state-of-the-art searches.
- attempting to incorporate the concept of online searching into various classroom applications to familiarize students with the use of this latest technological resource.

In addition, these same services have been recently offered to individuals and businesses in the community at the cost of computer time plus a "searching fee." It is being used, but it is too early to state success or failure with this project.

The appendix contains sample forms, searches, and news items.

Summary

The information research services offered at Lakeland Community College are well accepted and used by a majority of college personnel. I have attempted to take a businesslike approach to market and offer these services to make them attractive to our users with a minimum of paperwork and bureaucracy. I have attempted to analyze our users, their problems, and how they wish to approach the information explosion problem, and I have attempted to make information easily available, in forms they will use to assist them effect change, impart knowledge, solve problems, and be innovative. We feel we have reduced delays to a minimum while providing needed information. Alvin Toffler in Future Shock states the problem well:

> Delay is increasingly costly. Information must flow faster than ever before. At the same time, rapid change, by increasing the number of novel, unexpected problems, increases the amount of information needed. It takes more information to cope with a novel problem than one we have solved a dozen or a hundred times before. It is this combined demand for more information at faster speeds that is now undermining the great vertical hierarchies so typical of bureaucracy.

BIBLIOGRAPHY

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2. Meltzer, Morton F., The Information Imperative, American Management Association, Inc., 1971.

3. Taylor, Robert S., "Question-Negotiation and Information Seeking in Libraries," in Key Papers in Information Science, Arthur W. Elias, Ed., American Society for Information Science, Washington, D. C., 1971.

4. URBANDOC Input Index, Field-Test Cumulation No. 1, March, 1968, A publication of Project URBANDOC at the City University of New York, N. Y.

LIST OF APPENDICES

APPENDIX A - Broad Category Codes for Documents

APPENDIX B - Document Number and File Formation and Interpretation

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APPENDIX J - On-line Search Request Form

APPENDIX K - News article on Computer Search Services

APPENDIX A

BROAD CATEGORIES OF DOCUMENT ENTRIES USED BY RESEARCH INFORMATION CENTER

01 Monographs, reports, etc. not entered elsewhere.

02 Professional societies' publications, including proceedings of their conferences.

03 Universities and colleges, including their institutes, centers, departments, etc.

FEDERAL

04 Federal executive agencies, commissions, departments, authorities, etc.

05 Federal legislative agencies including laws, hearings, reports, etc.

06 Federal judicial agencies, including reports, decisions, etc.

STATE

07 State executive agencies, commissions, authorities, departments, etc.

08 State legislative agencies, including laws, hearings, reports, etc.

09 State judicial agencies, including reports, decisions, etc.

10 Municipal executive agencies.

11 County executive agencies (Single county jurisdiction,)

12 Local legislative agencies.

13 Minor judicial agencies.

14 Reserved

15 Metropolitan, multi-county or regional agencies - public or private.

Miscellaneous public and quasi-public agencies, local public interest groups. (Including ERIC)

16 United Nations and affiliated international agencies.

CATEGORIES OF DOCUMENTS (cont.)

17 Foreign: Agnecies of foreign governments, provinces, etc.

18 Foreign: Non-official agencies, public interest groups outside the United States.

19 Reserved.

20 Bibliographies (regardless of frequency or issuing agency.) Use for acquisition lists, publications lists, monthly catalogs, not for single subject items.

21 Used for all on-line bibliographic searches.

22 Maps.

23 Reserved.

24 Periodicals.

****

25 - 49 = FORMAT CODES

Entered after the slash and the broad category code of issuing agnecy.
Example: 03/25 = book issued by a college

25 Books.

26 Computer printouts.

27 Microfiche.

28 Microfilm.

29 Reserved.

30 - 49 Reserved.

****

50 - 99 = SPECIAL INTERNAL CATEGORIES OF INFORMATION.

50 Lakeland Community College Grant Proposals and Applications ONLY.

APPENDIX B

DOCUMENT NUMBER

FORMATION AND INTERPRETATION

Technical File - Sample Document Number

03/25 LAKECC70SP

TECHNICAL FILE

TF = Physical Location (Technical File)(dark blue labels).
All monographs, reports, studies, etc. that would not normally be considered a book.

03 = Broad category of document (universities and colleges).

25 = Format code (book, microfiche, etc.)

Author

*LAKE = First four alpha letters of the first word of the main corporate author.
LAKEland Community College

*CC = First alpha letter of the second and third words of the main corporate author.
Lakeland Community College

70 = Date of publication: Last numerals of date (1970).

SP = Title: First alpha letters of the first and second words of the significant title.
Student Profile Report

* If only one or two words appear in the corporate author entry then:

For one word use the first six alpha letters of the significant word.
Example: Census Bureau (one significant word)
Use: CENSUS

For two words use the first five alpha letters of the first word and the first letter of the second.
Example: Plain Dealer (two significant words)
Use: PLAIND

PERIODICALS

All periodicals, serials, series etc. on a regular--or irregular basis, regardless of issuing agency, to be classified by Category Number 24 and the the 3 or 4 alpha letters indicating title.
Example: 24 Ohio Labor Market Information (24 OLMI)
24 Tie Line (24 TL)

BOOKS, COMPUTER PRINTOUTS, AND MICROFICHE

Because of the physical format and space required in handling books, computer printouts and microfiche, a specific category subdivision is assigned to any document requiring a format code. It appears after the main category code followed by a slash.

Example: 03/25 LAKECC71FD

- 03 = broad category of issuing agency
- /25 = Format code
- LAKECC = corporate author
- 71 = date of publication
- FD = title notation

SUBJECT FILE

SF = Physical location (Subject file)(red labels)
data, loose sheets, material not of sufficient length or interest to be given a document number.
To be classified by subject and subject code.

*C83 = Subject code (cost of living)
Subject codes taken from authority list.

*Subject code is an adaptation from the Cutter-Sanborn Three-Figure Author Table (C. A. Cutter, H. R. Huntting Co.) All subject codes used from the subject heading authority list.

FILING IS DONE BY DOCUMENT NUMBERS IN NUMERIC ALPHA ORDER.

GRANTS FILE

A Grants File, hereafter known as GF, will house all the information with reference to funding resources, proposal preparation, programs, etc.

1. Procedure - the file will be divided into two main groups:
   A. Foundations and other related sources.
   B. Government

2. The file will be arranged in alphabetical order by the name of the organization and filed accordingly behind Foundations or Government.

3. All documents to be filed in this drawer will be coded thus:
   A. Every document will be stamped with the Research Department stamp.
   B. In the upper right hand corner will be written GF (Grants File)
   C. The document is placed in alpha order behind appropriate category.

DOCUMENT NUMBER

FORMING DOCUMENT NUMBERS:

FROM: Business names with a persons full name

1) Use surnames as first part of alpha code and initials as 2nd and 3rd part
   EX. W. J. Simmons & Association = SIMMWJ not WJSI

FROM: A Corporate author

Full Business name is considered.

FROM: City, State, County

1) Use first four letter of city, county, stat, etc. and the first letters of the next principal words ignoring the words state, county, city, etc.
   EX. Lake County Health & Welfare Council = LAKEHW

FROM: Acronyms

1) If an acronym is the proper name of a corporate author, use the acronym.
   EX. NOACA use: NOACA
   EX. TRW use: TRW

APPENDIX C

GUIDELINES FOR COMPLETING THE DOCUMENT RECORD FORMS

DOCUMENT NUMBER LINE

1. First blank unit: Type in the last two digits of the year we received the document.

2. Second unit-category: Type in the appropriate category left hand justified and enter sub-category only when appropriate as outlined in the classification handbook.

3. The "by" code not to exceed six digits.

4. The date unit: If there is no month involved, the first half of the date block remains blank and the last two digits of the year are entered in the right half of the date block. If a month is involved it goes in as a two digit entry (01 to 12) and then the year in the right half of the block.

5. Title unit: Never to exceed three digits. Two are normally used and a third one only for classification of similar titles.

6. Series unit: Never to exceed three digits. Usually starts at 100. Used for anything in sequence such as chapters in a book, series of reports, volumes, etc.

IN NO INSTANCE SHOULD THE DIGITS IN THE DOCUMENT LINE NUMBER EXCEED 26. THE BLANK SPACE ON THAT LINE IS LEFT FOR FUTURE DESIGNATIONS.

BY LINE

Used for entering corporate author or individual author. Use normal word order. For a United States Government Department entry (U.S.) delete the word "of" and also abbreviate the word department as Dept. in the author entry. (For example, United States Department of Labor becomes U.S. Dept. Labor, United States Department of Health, Education, and Welfare becomes U.S. Dept. HEW, and United States Department of Transportation becomes U.S. Dept. Transportation.)

ADDED ENTRY: Use for an individual co-author (Last name first or divisions of companies). Name of groups or association co-sponsoring the author.

THE BY AND ADDED ENTRIES SHOULD NEVER EXCEED 51 DIGITS INCLUDING SPACES. ANYTHING OVER 51 SPACES WILL BE AUTOMATICALLY CUT OFF IN DATA PROCESSING. TO REDUCE THE NUMBER OF DIGITS, PREPOSITIONS, ARTICLES AND CONJUCTIONS CAN BE DESIGNATED IN PARENTHESES AND THEREBY WILL NOT BE ENTERED IN DATA PROCESSING.

If an added entry for the name of an association, organization etc. that has supported the original author such as "for, to, in cooperation with, under sponsorship of" etc., these terms should appear in parentheses. For example, WICHE (in cooperation with) American Council on Education.

GUIDELINES FOR MICROFICHE

1. The author is coded as with any other document. (Ex. Even though the microfiche was distributed to us be ERIC that does not necessarily mean that ERIC is the author. The author will appear on the title page of the report as in any other report.)

2. Be certain to include the format code 27 for all microfiche documents.

3. If there is an ED number (indicating the document appeared in ERIC Research in Education) place the ED number in the last section on the the document number line of the card.

4. In the section where we indicate pages also indicate the number of microfiche to the set. (It may be abbreviated MF.)

5. Be certain that our document number appears on a blue label in the center of the microfiche envelope.

6. If there is to be an abstract be certain it is typed on the back of the document card as with other reports.

TITLE LINE

The title will be the normal word order entry as it appears on the document.

THE TITLE MUST NEVER EXCEED 51 DIGITS INCLUDING SPACES. ANYTHING OVER 51 WILL BE AUTOMATICALLY CUT OFF IN DATA PROCESSING. ANY OF THE FOLLOWING MAY BE DONE:

- INITIAL ARTICLE OF THE TITLE SHOULD BE DELETED (EX. A, AN, THE)
- UNDERLINE ONLY SIGNIFICANT WORDS NOT EXCEEDING 51. ONLY THE UNDERLINED WORDS WILL BE KEYPUNCHED.
- PREPOSITIONS, CONJUNCTIONS, AND ARTICLES CAN BE ELIMINATED OR INCLUDED IN PARENTHESES AND AGAIN WILL NOT BE KEYPUNCHED.
- CAN COMPRESS WORDS WHERE NECESSARY BY DELETING THE VOWELS AND MAINTAINING THE CONSONANTS, AS PROGRAMS -PRGRMS OR ANY OTHER STANDARDIZED COMPRESSION OR ABBREVIATION SUCH AS MANAGEMENT - MGMT, ASSOCIATION - ASSOC.

DATE LINE

Enter the month, date, and year of publication and pages. Enter the approximate number of pages in the document. The geography and format columns are not being used to indicate geography and format. Instead these spaces can be used as an "open column" to edentify any additional significant information that would be of interest to the user of the document (Ex. Bibliography; government number; NTIS number; ED number etc.)

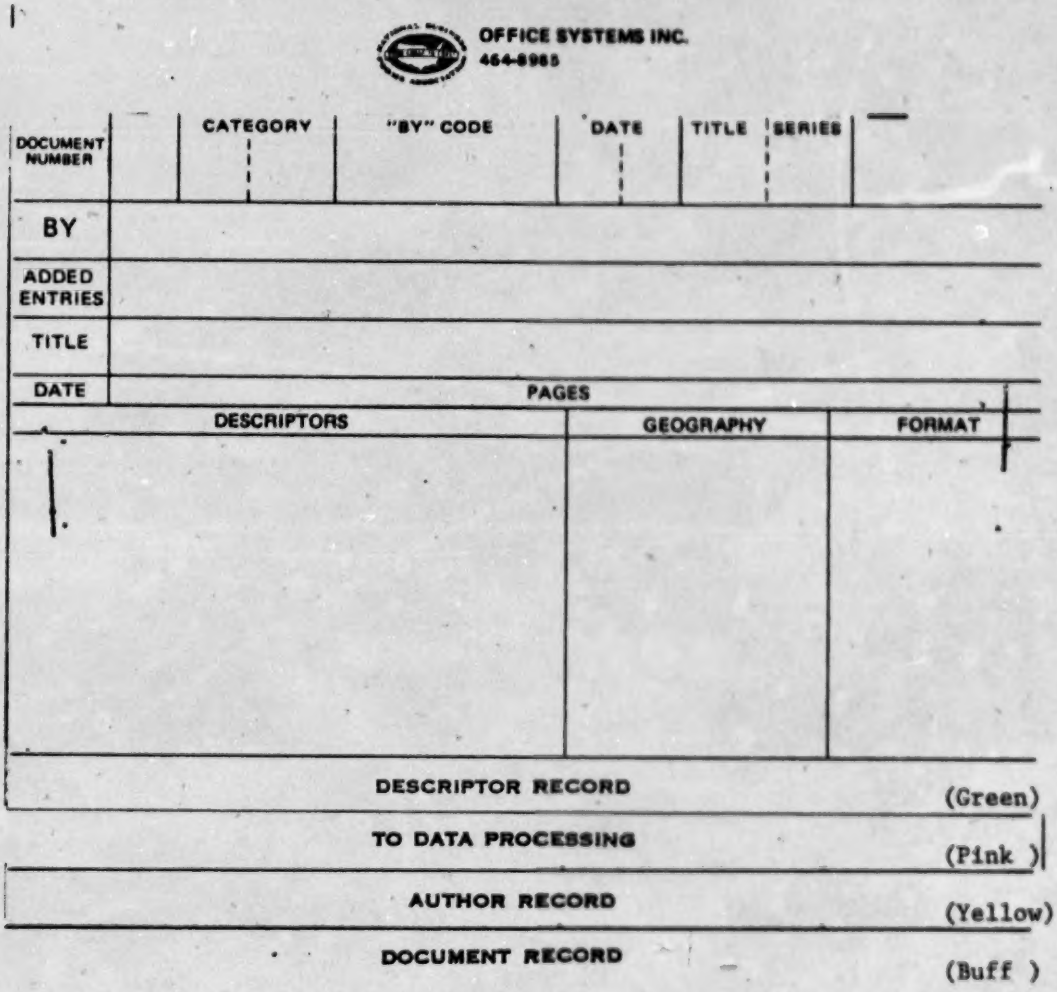
DESCRIPTORS

Descriptors are verified by Director in accordance with our descriptor authority list.

APPENDIX D

Card format for cataloging all publications, documents and records.

(4-part form with carbon in between)



OFFICE MANAGEMENT					
BUSINESS EDUCATION FOR EMERGENT OFFICE	73	03	OHIOSU	70	BE
DEVELOPMENT WORD PROCESSING & BUSINESS EDUC PROFESS	73	01	OBERSB	72	DW
OFFICE OCCUPATIONS EDUCATION					
BUSINESS EDUCATION FOR EMERGENT OFFICE	73	03	OHIOSU	70	BE
INSTRCTNL OBJCTVS JR COLL COURSE IN SECRTRL PRCDRS	73	15	ERICJC	72	IO
OFFICE PRACTICE					
BUSINESS EDUCATION FOR EMERGENT OFFICE	73	03	OHIOSU	70	BE
INSTRCTNL OBJCTVS JR COLL COURSE IN SECRTRL PRCDRS	73	15	ERICJC	72	IO
OHIO					
BUDGETING OHIOS PUBLIC TWO YEAR CAMPUSES	72	07	OHIOBR	72	BIT
BUDGETING OHIOS PUBLIC UNIVERSITIES	72	07	OHIOBR	72	BIU
COMPENDIUM LEGISLATIVE ENACTMENTS AFFECTING STATE	73	01	SQUIRS	08/72	CL
CONGRESSIONAL DISTRICT DATA BOOK OHIO	73	04	COMMBC	10/72	CD
COUNTY BUSINESS PATTERNS 1970 OHIO	73	04	COMMBC	71	CB
DIRECTORY OF OHIO MANUFACTURERS VOL 1	73	07/25	OHIODD	72	OM 101
DIRECTORY OF OHIO MANUFACTURERS VOL 2	73	07/25	OHIODD	72	OM 102
FACILITIES INVENTORY & UTILIZATION SUMMARY REPORT	73	07	OHIOBR	06/71	FI
GENERAL SOCIAL AND ECONOMIC CHARACTERISTICS OHIO	72	04/25	COMMBC	04/72	GS
INSTITUITIONAL PLANNING OHIOS PUBLIC UNIVERSITIES	72	07	OHIOBR	72	IP
INSTITUTIONAL PLANNING OHIOS PUBLIC 2 YEAR CAMPUSES	72	07	OHIOBR	72	IPT
MANAGEMENT STUDY & ANALYSIS OHIO PUBLIC HIGHER EDUC	72	08	OHIOHR	69	MS
MANPOWER NEEDS ENVR MGMT OCCPTN INDUSTRIAL FIRMS CH	73	03	OHIOSU	06/72	MN
NURSE INVENTORY	73	07	OHIOBN	72	NI
OCCUPATIONAL WAGE SURVEY OHIO FEBRUARY 1972	73	04	LABOLS	01/73	OW
OHIO ALMANAC SIXTH EDITION	73	01/25	OHIOA	72	OA
OHIO DIRECTORY OF DRUG PROGRAMS	73	07	OHIODM	11/72	OH
POPULATION FORECAST 1970-2000	73	15	NDACA	09/72	PF
RESEARCH & PUBLIC SERVICE APPROPRIATION	73	07	OHIOBR	70	RP

DOCUMENT AUTHOR / DOCUMENT TITLE			DOCUMENT NUMBER	
AMER ASSOC OF COMMUNITY & JR COLLEGES-ARDEN L PRATT				
ENVIRONMENTAL EDUC IN COMMUNITY COLLEGE	73	02	AMERAC	71 EE
AMER ASSOC OF JR COLLEGES-ERIC CLEARINGHOUSE JR COL				
PERSONALITY CHARACTERISTICS COLLEGE-UNIV FACULTY	72	02	AMERAJ	68 PC
AMER ASSOC OF JUNIOR COLLEGES				
AAJC INFORMATION EXCHANGE	72	02	AMERAJ	71 ED
STRATEGIES FOR CHANGE REPORT FROM PROJECT FOCUS	72	02	AMERAJ	72 SC
AMER ASSOC OF JUNIOR COLLEGES-ERIC CLEARINGHOUSE				
JUNIOR COLLEGE DIRECTORY 1971	72	02	AMERAJ	71 JC
ORIENTATION FOR FACULTY IN JUNIOR COLLEGES	72	02	AMERAJ	70 OF
AMER ASSOC OF JUNIOR COLLEGES-KING FRANCIS P				
BENEFIT PLANS IN JUNIOR COLLEGES	72	02/25	AMERAJ	71 BP
AMER ASSOC OF JUNIOR COLLEGES-PRATT ARDEN EDITOR				
AAJC INFORMATION EXCHANGE	73	02	AMERAJ	71 IE
AMER ASSOC OF JUNIOR COLLEGES-SWIFT JOAN W				
HUMAN SERVICES CAREER PROGRAMS & COMMUNITY COLLEGES	73	02	AMERAJ	71 HS
AMER ASSOC STATE COLL & UNIV-BENGELSDORF WINNIE				
ETHNIC STUDIES HIGHER EDUC STATE OF ART & BIBLIOGR	73	20	AMERAS	08/72 ES
AMER COLLEGE PUBLIC RELATIONS ASSOC				
FEDERAL AFFAIRS HANDBOOK	73	25/02	AMERCP	73 FA
AMER COLLEGE TESTING PROGRAM RESEARCH SERVICES				
ACT CLASS PROFILE REPORT 1972-73 FRESHMEN LCC	73	01	AMERCT	72 CP
AMER COUNCIL ON EDUCATION				
FACULTY TENURE CONTRACT SYSTEMS CURRENT PRACTICE	73	15	AMERCE	07/72 FT

DOCUMENT TITLE
DOCUMENT AUTHOR

DOCUMENT NUMBER

CORRECTIONS PROGRAM
LAKELAND COMMUNITY COLLEGE-SLOMINSKI LEN
73 03 LAKECC 01/73 CP

COST FINDING PRINCIPLES & PROCEDURES PRELIMINARY DR
WICHE-NATL CENTER HIGHER EDUC MANAGEMENT SYSTEMS
73 15 WICHE 71 CF

COST PRINCIPLES PROCEDURES FOR INDIRECT COST RATES
US DEPT HEW
73 04 HEW 06/71 CP

COUNTY BUSINESS PATTERNS 1970 OHIO
US DEPT COMMERCE-BUREAU OF CENSUS
73 04 COMMBC 71 CB

CRIMINAL STATISTICS
US DEPT HEW-NATL INSTITUTE OF MENTAL HEALTH
73 04 HEWNIM 72 CS

CURRENT INDEX TO JOURNALS IN EDUCATION
MACMILLAN INFORMATION
73 24 CIJE 01/73 CI

CURRENT REGULATION OF PRIVATE POLICE
RAND CORP-US DEPT OF JUSTICE
73 01 RANDC 71 CR

CURRICULUM ACTVTS GUIDE WATER POLLTN ENVRNMNTL STUD
US ENVIRONMENTAL PROTECTION AG-OFFICE WATER PROGRAM
73 04 ENVIPA 72 CA

DATA COMMUNICATIONS MARKET INFORMATION SOURCES
US DEPT COMMERCE-BUREAU DOMESTIC COMMERCE
73 04 COMMBD 07/72 DC

DATA ELEMENT DICTIONARY COURSE
WICHE-NATL CENTER HIGHER EDUC MANAGEMENT SYSTEMS
73 15 WICHE 72 DEC

DATA ELEMENT DICTIONARY FACILITIES
WICHE-NATL CENTER HIGHER EDUC MANAGEMENT SYSTEMS
73 15 WICHE 72 DEF

DATA ELEMENT DICTIONARY FINANCE
WICHE-NATL CENTER HIGHER EDUC MANAGEMENT SYSTEMS
73 15 WICHE 72 DEN

DOCUMENT NUMBER					DOCUMENT TITLE DOCUMENT AUTHOR
73	04/25	NATIAR	72	GO	US GOVT ORGANIZATION MANUAL 1972-73 US NATL ARCHIVES & RECORDS SERVICE
72	04	NATISF	71	AS	AMER SCIENCE MANPOWER 1970 NATL SCIENCE FOUNDATION
73	04/25	NAVYSS	01/71	FS	FOOD SERVICE OPERATIONS US DEPT NAVY-NAVAL SUPPLY SYSTEMS COMMAND
73	04/25	OFFIMB	72	SI	STANDARD INDUSTRIAL CLASSIFICATION MANUAL 1972 US OFFICE OF MANAGEMENT AND BUDGET
72	04	PRESCC	70	CE	SUGGESTED GUIDELINES FOR CONSUMER EDUC GRADES K-12 PRESIDENTS COMMITTEE ON CONSUMER INTERESTS
73	04	TRANNH	71	FT	FORUM ON TRAFFIC SAFETY ALCOHOL COUNTERMEASURES US DEPT TRANSPORT-NATL HIGHWAY TRAFFIC SAFETY ADMIN
73	04	TRANNH	04/72	TL	TRAFFIC LAWS COMMENTARY US DEPT TRANSPORT-NATL HIGHWAY TRAFFIC SAFETY ADMIN
73	04	TRANNH	07/72	MS	MANUAL TRAFFIC ENFORCEMENT ALCOHOL RELATED CRASHES US DEPT TRANSP-NATL HIGHWAY TRAFFIC SAFETY ADMINIST
73	04	TREAIR	72	ZC	ZIP CODE AREA DATA STATISTICS INCOME 1969 US DEPT TREASUREY-INTERNAL REVENUE SERVICE
73	04/25	WHITHC	02/72	LB 100	LOOK AT BUSINESS IN 1990 WHITE HOUSE CONFERENCE ON INDUSTRIAL WORLD AHEAD
73	04/25	WHITHC	02/72	LB 101	CHAPTER 1-CONFERENCE OVERVIEW WHITE HOUSE CONFERENCE ON INDUSTRIAL WORLD AHEAD
73	04/25	WHITHC	02/72	LB 102	CHAPTER 2-SOCIAL RESPONSIBILITY OF BUSINESS WHITE HOUSE CONFERENCE ON INDUSTRIAL WORLD AHEAD

APPENDIX F

CARD RECORDS--FILING ORDER

1. Document number record (master record)
   A. Numeric Alpha

2. Author record*
   A. Author or issuing agency, additional author entry, title filing order.

3. Title record
   A. Alpha order

4. Subjects
   A. Descriptors and subject record alpha order

*If a cooperating, supporting, or secondary author entry ("added entry") is significant, it will be underlined in red on the author record card. The added entry (now underlined in red) will appear as a cross reference or an orange index card to the original document.

	DOCUMENT NUMBER	CATEGORY	"BY" CODE	DATE	TITLE	SERIES
EX.	73	15	ERICHE	09 72	AA	

BY	ERIC Clearinghouse on Higher Education
ADDED ENTRIES	Shulman, Carol Hernstadt
TITLE	Affirmative action: Women's rights on campus.
DATE	September, 1972 PAGES 46

DESCRIPTORS	GEOGRAPHY	FORMAT
Affirmative action Women--Higher education Women Colleges		

Shulman Carol Hernstadt
SEE: ERIC Clearinghouse on Higher Education
Affirmative action: Women's rights on campus.
15 ERICHE 09/72 AA

APPENDIX G

Research Services Department

(Green)

We have received your request for _____

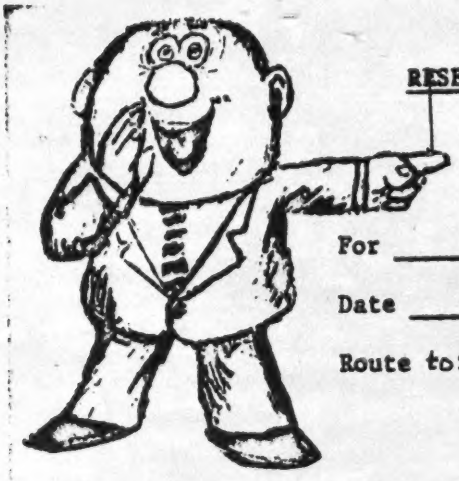
_____

_____ It is out on loan

_____ Will send as soon as it is returned

_____ Will order a copy for you

ROUTING SLIPS



RESEARCH SERVICES

(Pink)

For _____

Date _____

Route to: _____

_____ Your request

_____ Might be of interest to you

_____ Please return by _____

_____ Do not return

_____ Do you want this item(s) ordered? ___Yes ___No

Comments _____

_____

APPENDIX H

RESEARCH SERVICES (RF)

FILING STRUCTURE

AC ACADEMIC AND INSTRUCTIONAL

- AC Course Information
- AC Enrollment
- AC Students

AD ADMINISTRATION AND ORGANIZATION

- AD Budget
- AD Forms
- AD Registration Formats
- AD Space

CM COMMUNICATIONS

- CM Correspondence
- CM Minutes
- CM Orders
- CM Publications

CT COMMITTEES & SEMINARS

OR ORGANIZATIONS

- OR Membership
- OR Nonmembership

PE PERSONNEL & EMPLOYMENT

- PE Faculty
- PE Staff

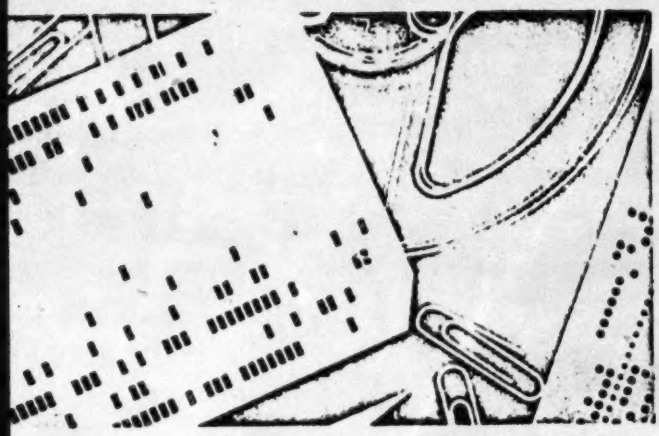
PR PROJECTS

- PR 1973
- PR Pending
- PR Completed
- PR 1972

RO RESEARCH OPERATIONS

- RO WICHE (NCHEMS)
- RO ACT Research Services
- RO Affirmative Action
- RO Board of Regents
- RO Data Collection and Utilization
- RO Grants
- RO Questionnaires
- RO Tie Line

APPENDIX I



Tie Line

A publication of the Research Department

Lakeland Community College

Volume IV, No. 1, September 15, 1975

Mary Alice Valvoda, Director of Research x295
Cuba Hite & Mary Hansen, Research Assts. x297

Tie Line is published monthly in the academic year (not June, July, and August). Tie Line aims to assist you in broadening your knowledge networks by keeping you informed of internal and external business, education, and research oriented publications, topical new items and information and instructional resources. There are frequently brief abstracts or reviews of current literature.

Subject, title, author and document number for all documents, grant proposals, reports, studies, etc., available in the Research Information Center, is listed in a cumulative index called ACCESS. This list is available for your perusal in the Research Office or a loan copy may be taken to your own office.

Tie Line is distributed to all Lakeland administrative and instructional personnel. Distribution to particular community agencies and educational institutions is upon request only. Tie Line disseminates information acquired in the process of identifying, centralizing, and coordinating academic and administrative information services and resources.

"WHAT IS RESEARCH INFORMATION SERVICE?"

We have often been asked, "What is an information service anyway?" or "What do you people do with all that stuff you get up there?" Among other things, we are in the business of information and instructional resources. "We will do almost anything with information except falsify it," is our usual reply. We find information; organize information; repackage, report and update information; alert faculty and administration about new information in their fields; refer or use other manual and computerized information sources; we "massage information!" We write about and disseminate information, assist you in locating and using a variety of information resources. You name it--and within the limits of budget and manpower, we will attempt to do it.

NEW GRANTS

The efforts of several Lakeland people in cooperation with the Research Office have resulted in Lakeland Community College receiving grants and foundation support this summer.

ERIC PUBLISHES LAKELAND COMMUNITY COLLEGE REPORTS

The ERIC Clearinghouse for Junior Colleges has accepted two Lakeland Community College research reports for announcement in Resources in Education abstract journal. The report, Follow-up of 1974 Graduates in Selected Technology Programs, is available as ED 104 475. The second report, Employment Follow-up of Nursing Graduates, Lakeland Community College, 1970-1973, is available as ED 104 476.

BIBLIOGRAPHY OF RESEARCH REPORTS

This issue of Tie Line includes as a supplement a comprehensive listing of all the reports published by the Research Office.

* RECENT ACQUISITIONS *

COLLECTIVE BARGAINING

4101 03 CORNEU 74 IC
AN INTRODUCTION TO COLLECTIVE BARGAINING IN HIGHER EDUCATION, 33 p.
Cornell University, New York State School of Industrial and Labor Relations, A. W. J. Thomson, 1974.

4102 03 CORNEU 01/70 CB
COALITION BARGAINING, 39 p.
Cornell University, New York State School of Industrial and Labor Relations, Philip J. Schwarz, 1970.

The purpose of this report is to explain the "coalition" or "coordinated" bargaining technique by examining attacks, defenses, and analyses that have appeared in regular and union periodicals, labor reporting services, academic journals, books and pamphlets. An annotated bibliography follows the report.

4103 20 NATICS 04/73 CB
COLLECTIVE BARGAINING IN HIGHER EDUCATION, BIBLIOGRAPHY, 57 p.
Baruch College, National Center for the Study of Collective Bargaining, John C. Allen, 1973.

4104 01 HEDGER 12/74 CC
CONSEQUENCES OF COLLECTIVE BARGAINING IN HIGHER EDUCATION, 15 p.
Royster C. Hedgepeth in Journal of Higher Education, No. 9, December, 1974.

4105 03 CORNEU 02/74 EL
EXAMPLES OF LANGUAGE AND INTERPRETATION IN PUBLIC SECTOR COLLECTIVE BARGAINING AGREEMENTS: A GUIDE FOR PUBLIC OFFICIALS AND OTHER INTERESTED PARTIES, 115 p.
Cornell University, New York State School of Industrial and Labor Relations, June Weisberger, 1974.

APPENDIX J

LAKELAND COMMUNITY COLLEGE

RESEARCH OFFICE

COMPUTER SEARCH SERVICES

Requestor:_____ Question No.:_____

Department:_____ Ext. No._____

_____

_____

Intended for use in _____ Course

Statement of Search Question:_____

_____

_____

_____

Files to be Searched:_____

_____

Search Strategy:_____

_____

_____

I understand that any off-line citations will be 15¢ per citation and this cost will be:

☐ 1. charged back to _____ department.

☐ 2. paid by me personally on delivery.

Signature_____ Date_____

For Research Office use only:

Question No.:_____ Date searched:_____

Files:_____

Search time:_____

On-line citations:_____ Format:_____

Off-line citations:_____ Format:_____

Costs: Computer/Line:_____ Citations:_____ Invoice Amt.:_____

Searcher_____ Invoice No.:_____

MAV/ch
1/22/76

APPENDIX K

The Painesville Telegraph, Thursday, March 25, 1976

Computer files open to public at Lakeland

UNIVERSITY OF CALIF.
LOS ANGELES
SEP 17 1976
CLEARINGHOUSE FOR
JUNIOR COLLEGES

● 'This service is available to any business, agency or individual in the county. It should be especially useful to small businesses, research and development operations, teachers, professors, students, public agencies and anyone who wants to find out where to look for information.' Mrs. Mary Valvoda, Lakeland research director

By JIM SPEROS
Telegraph Staff Reporter

Lakeland College Research Service Director, Mrs. Mary Alice Valvoda pushed a few buttons on her on-line computer terminal.

The terminal sat silently for a second, then began to type.

When it finished, the terminal had informed Mrs. Valvoda that more than 2,000 abstracts of U.S. Government studies on zoning were in its memory bank in Palo Alto, Calif.

During the pause, the computer had examined more than 20,000 abstracts in its files and selected those Mrs. Valvoda had requested.

She pushed a few more buttons, and the terminal typed out one of those abstracts in less than 30 seconds.

She then checked two other computer "files" of social science citations (more than 325,000 items) and business information abstracts (29,000 items). Each file had several abstracts of interest to her. She typed in the appropriate codes and will receive the abstracts by mail in a few days.

Mrs. Valvoda could have asked the computer for information on almost any subject. Depending on which and how many of the "files" she had selected, she could have checked more than 7.5 million abstracts of articles, studies, and research by government, business, and private groups.

The terminal and its "host" computer in California is part of Lakeland's new Computer Search Services (CSS), which went into operation in early March.

Through the service, scholars, businesses, researchers, and individuals can find out what information is available on almost any subject they have in mind.

"This service is available to any business, agency, or individual in the county" Mrs. Valvoda said. "It should be especially useful to small businesses, research and development operations, teachers and professors, students, public agencies, and anyone who wants to find out where to look for information."

A third grader doing a report on Guatemala probably wouldn't want to use the service. It can be expensive, but on some projects it is well worth the money.

Lakeland set up a fee schedule for work done outside the college.

Those outside the college will be asked to reimburse it for its costs for the computer, including (where applicable) a search preparation fee, the actual computer time used and a nominal charge for abstracts sent by mail.

"The computer time is the most expensive part of the search process," Mrs. Valvoda said. "It can vary from $25 to more than $100 per hour, so any figure we would give here would probably not mean much. We've got to remember, though, that most searches won't take more than 10 or 15 minutes on the computer."

She showed a rather lengthy search of information on the effects of hypnosis on smoking and studying, one which required searching the 482,000-item governmental research file, the 228,000 items in the educational research file, the 21,000 abstracts in the instructional and research materials file, the 218,000 items in the psychological abstracts file, and the 323,000 items in the social sciences citations index.

Time to search the 1.2 million abstracts by computer was 46 minutes. Total charges—including the abstracts to be mailed from California—was $38. Total cost for the zoning search through 779,000 abstracts was $8.

"It would have taken a skilled researcher many days to check all those sources, even if he had them available," Mrs. Valvoda said. "The service can be very cost-effective."

Copies of searches already completed will be available to the public for a reproduction cost if the search was done for the college she said, but individuals will probably want to update the search if it is more than six months old.

Searches done for private individuals and businesses will be kept confidential, she said, and will not be released to others.

In addition to the fields listed above, the CSS system can check on 471,000 physics abstracts, 355,000 electrical, electronics, and computer abstracts, 84,000 citations on mechanical engineering and engineering management, another 412,000 abstracts from 3,500 engineering journals, 1.1 million chemical abstracts, and 705,000 items about agricultural-related material.

CSS can also check 910,000 citations on life sciences, 850,000 citations from 2,500 journals on physical and life sciences, 83,000 citations on oceanic information, 25,000 meterological items, two special files on foundations and foundation grants, abstracts on all doctoral dissertations given in the United States, 20,000 items in an exceptional child education file, 21,000 items on oil production, abstracts on pollution articles and studies, and several other special files.

Information on the use of the system is available from Mrs. Valvoda at Lakeland.